

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A liquid crystal display device which carries out emphasis conversion on video data supplied to a liquid crystal display panel in accordance with at least video data of previous vertical period and video data of current vertical period, thereby compensating for optical response properties of the liquid crystal display panel, the liquid crystal display device comprising:

| ~~an I/P conversion section means~~ which, when incoming video data is an interlaced signal, converts the interlaced signal into a progressive signal in accordance with any one of two or more I/P conversion methods; and

| ~~an emphasis conversion section means~~ which carries out emphasis conversion on video data of current vertical period so as to emphasize grayscale transition at least from previous vertical period to current vertical period in the progressive signal,

| wherein a degree of the emphasis conversion on the video data is controlled so as to be changed in accordance with which ~~kind of~~ I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion.

2. (Currently Amended) The liquid crystal display device according to claim 1, further comprising:

table memory which stores an emphasis conversion parameter determined by video data of current vertical period and video data of previous vertical period,

| the emphasis conversion ~~means~~ section having:

| an operation section which performs emphasis operation on the video data by using the emphasis conversion parameter; and

| a multiplying section which multiplies output data obtained by the emphasis operation by a coefficient varying depending upon which kind of I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion.

3. (Withdrawn - currently amended) The liquid crystal display device according to claim 1, further comprising:

table memory which is referenced ~~to~~-when incoming video data is converted by a first I/P conversion method, and stores an emphasis conversion parameter determined by video data of current vertical period and video data of previous vertical period; and

table memory which is referenced ~~to~~-when incoming video data is converted by a second I/P conversion method, and stores an emphasis conversion parameter determined by video data of current vertical period and video data of previous vertical period,

the emphasis conversion ~~means-section~~ having:

an operation section which performs emphasis operation on the video data obtained by the I/P conversion by using the emphasis conversion parameter which is read from the table memory determined by which kind of I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion.

4. (Withdrawn – currently amended) The liquid crystal display device according to claim 1, further comprising:

a temperature detection means-section which detects a device internal temperature,

the emphasis conversion ~~means-section~~ changing the degree of emphasis conversion performed on the video data in accordance with a detection result of the device internal temperature.

5. (Withdrawn – currently amended) The liquid crystal display device according to claim 4, further comprising:

table memory which stores an emphasis conversion parameter determined by video data of current vertical period and video data of previous vertical period,

the emphasis conversion ~~means-section~~ having:

an operation section which performs emphasis operation on the video data obtained by the I/P conversion, by using the emphasis conversion parameter; and

a multiplying section which multiplies output data supplied from the operation section by a coefficient varying depending upon (i) which kind of I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion and (ii) a detection result of the device internal temperature.

6. (Withdrawn – currently amended) The liquid crystal display device according to claim 4, further comprising:

table memory which is referenced ~~to~~ when incoming video data is converted by a first I/P conversion method, and stores an emphasis conversion parameter determined by video data of current vertical period and video data of previous vertical period; and

table memory which is referenced ~~to~~ when incoming video data is converted by a second I/P conversion method, and stores an emphasis conversion parameter determined by video data of current vertical period and video data of previous vertical period,

the emphasis conversion ~~means~~ section having:

an operation section which performs emphasis operation on the video data obtained by the I/P conversion by using the emphasis conversion parameter which is read from the table memory determined by which ~~kind of~~ I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion; and

a multiplying section which multiplies output data obtained by the emphasis operation by a coefficient varying depending upon a detection result of the device internal temperature.

7. (Withdrawn – currently amended) The liquid crystal display device according to claim 4, further comprising:

table memories which are referenced ~~to~~ when incoming video data is converted by a first I/P conversion method, and store emphasis conversion parameters respectively associated with a plurality of device internal temperatures, the emphasis conversion parameters each being determined by video data of current vertical period and video data of previous vertical period; and

table memories which are referenced to—when incoming video data is converted by a second I/P conversion method, and store emphasis conversion parameters respectively associated with a plurality of device internal temperatures, the emphasis conversion parameters each being determined by video data of current vertical period and video data of previous vertical period,

the emphasis conversion ~~means~~ section having:

an operation section which performs emphasis operation on the video data obtained by the I/P conversion by using the emphasis conversion parameter which is read from the table memory determined by (i) which kind of I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion and (ii) a detection result of the device internal temperature.

8. (Withdrawn – currently amended) The liquid crystal display device according to claim 4, further comprising:

table memories which store emphasis conversion parameters respectively associated with a plurality of device internal temperatures, the emphasis conversion parameters each being determined by video data of current vertical period and video data of previous vertical period; and

the emphasis conversion ~~means~~ section having:

an operation section which performs emphasis operation on the video data obtained by the I/P conversion by using the emphasis conversion parameter which is read from the table memory determined by a result of comparison between (i) a switching temperature determined by which kind of I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion and (ii) a detection result of the device internal temperature.

9. (Withdrawn – currently amended) The liquid crystal display device according to claim 8, further comprising:

an operation section which performs a predetermined operation on temperature data that is the detection result of the device internal temperature, the operation being determined for each of the two or more I/P conversion methods;

a comparison section which compares between the temperature data having been subjected to the operation and given threshold temperature data determined in advance; and

a control signal output section which generates a switching control signal for controlling switching of the emphasis conversion parameters, in accordance with a result of the comparison.

10. (Withdrawn – currently amended) The liquid crystal display device according to claim 8, further comprising:

a comparison section which compares between temperature data that is the detection result of the device internal temperature and a given threshold temperature data determined for each of the two or more I/P conversion methods; and

a control signal output section which generates a switching control signal for controlling switching of the emphasis conversion parameters, in accordance with a result of the comparison.

11. (Currently Amended) A signal processing unit for use in a liquid crystal display device, the signal processing unit comprising:

a conversion means-section which converts an interlaced video signal into a progressive video signal; and

a correction means-section which corrects a video signal of current vertical period so as to emphasize grayscale transition at least from previous vertical period to current vertical period in the progressive video signal,

wherein the conversion means-section is capable of conversions by two or more conversion methods, and

a degree of the grayscale transition emphasis performed by the correction means-section is changed in accordance with a-which conversion method among the two or more conversion methods is used by the conversion-means section.

12. (Withdrawn – currently amended) The signal processing unit for use in a liquid crystal display device according to claim 11, wherein:

the two or more conversion methods include a first conversion method of performing motion detection between fields and a second conversion method of performing conversion in a given procedure regardless of presence or absence of motion between fields, and

in a case where the conversion ~~means~~section performs conversion by the second conversion method, a degree of grayscale transition emphasis performed by the correction ~~means~~section is changed to be lower than in a case where the conversion ~~means~~section performs conversion by the first conversion method.

13. (Withdrawn – currently amended) The signal processing unit for use in a liquid crystal display device according to claim 11, wherein:

the two or more conversion methods include a first conversion method of performing conversion by motion prediction between fields and a second conversion method of performing conversion in a given procedure regardless of presence or absence of motion between fields, and

in a case where the conversion ~~means~~section performs conversion by the second conversion method, a degree of grayscale transition emphasis performed by the correction ~~means~~section is changed to be lower than in a case where the conversion ~~means~~section performs conversion by the first conversion method.

14. (Currently Amended) The signal processing unit for use in a liquid crystal display device according to claim 11, wherein:

the two or more conversion methods include a first conversion method of referencing to a video signal of other field for conversion and a second conversion method of not referencing to a video signal of other field for conversion, and

in a case where the conversion ~~means~~section performs conversion by the second conversion method, a degree of grayscale transition emphasis performed by the correction ~~means~~section is changed to be lower than in a case where the conversion ~~means~~section performs conversion by the first conversion method.

15. (Withdrawn) The signal processing unit for use in a liquid crystal display device according to claim 12, wherein:

the second conversion method is a method of copying a video signal in a certain field, or averaging sets of video signals in a certain field or averaging sets of video signals in a certain field while being weighted, so as to convert the video signal in the field into a progressive video signal.

16. (Withdrawn – currently amended) The signal processing unit for use in a liquid crystal display device according to claim 11, wherein:

the correction ~~means~~ section includes a plurality of table memories each of which stores emphasis conversion parameter determined by at least the video signal of previous vertical period and the video signal of current vertical period, and

the table memories referenced to by the correction ~~means~~ section are switched in accordance with a conversion method used by the conversion ~~means~~ section, so that the degree of the grayscale transition emphasis is changed.

17. (Currently Amended) The signal processing unit for use in a liquid crystal display device according to claim 11, wherein:

the correction ~~means~~ section includes: a table memory which stores an emphasis conversion parameter determined by at least the video signal of previous vertical period and the video signal of current vertical period; and an adjustment means ~~section~~ which adjusts a correction amount for the video signal of current vertical period in accordance with the degree of grayscale transition emphasis, the correction amount being determined with reference to the table memory.

18. (Withdrawn – currently amended) The signal processing unit for use in a liquid crystal display device according to claim 11, wherein:

the degree of grayscale transition emphasis performed by the correction ~~means~~section is changed in accordance with not only the conversion method used by the conversion ~~means~~section but also a device internal temperature.

19. (Withdrawn – currently amended) The signal processing unit for use in a liquid crystal display device according to claim 18, wherein:

the correction ~~means~~section includes a plurality of table memories each of which stores emphasis conversion parameter determined by at least the video signal of previous vertical period and the video signal of current vertical period, and

the table memories referenced to by the correction ~~means~~section are switched in accordance with (a) ~~a~~the conversion method used by the conversion ~~means~~section and (b) ~~a~~the device internal temperature, so that the degree of the grayscale transition emphasis is changed.

20. (Withdrawn – currently amended) The signal processing unit for use in a liquid crystal display device according to claim 18, wherein:

the correction ~~means~~section includes a plurality of table memories each of which stores an emphasis conversion parameter determined by at least the video signal of previous vertical period and the video signal of current vertical period,

the correction ~~means~~section further includes an adjustment ~~means~~section which adjusts a correction amount for the video signal of current vertical period, the correction amount being determined with reference to any one of the table memories, and

a degree of the adjustment performed by the adjustment ~~means~~section is changed in accordance with a device internal temperature, and the table memories referenced to by the correction ~~means~~section are switched in accordance with ~~a~~the conversion method used by the conversion ~~means~~section, so that the degree of the grayscale transition emphasis is changed.

21. (Withdrawn – currently amended) The signal processing unit for use in a liquid crystal display device according to claim 18, wherein:

the correction ~~means~~ section includes a plurality of table memories each of which stores an emphasis conversion parameter determined by at least the video signal of previous vertical period and the video signal of current vertical period,

at least part of the table memories are shared between the two or more conversion methods used by the conversion ~~means~~ section, and

the table memories referenced to by the correction ~~means~~ section are switched in accordance with a ~~the~~ device internal temperature, and switching temperatures for switching between the table memories are changed in accordance with a ~~the~~ conversion method used by the conversion ~~means~~ section, so that the degree of the grayscale transition emphasis is changed.

22. (Withdrawn – currently amended) The signal processing unit for use in a liquid crystal display device according to claim 21, wherein:

the table memories are switched in such a manner that part of the table memories is referenced ~~to~~ only when the conversion ~~means~~ section performs conversion by a particular conversion method.

23. (Currently Amended) A signal processing unit for use in a liquid crystal display device, the signal processing unit ~~including~~ comprising:

a conversion ~~means~~ section which converts an interlaced video signal into a progressive video signal; and

a modulating section that modulates the progressive video signal so as to emphasize grayscale transition in each pixel of the liquid crystal display device,

wherein the conversion ~~means~~ section is capable of conversions by two or more conversion methods, and

a degree of the grayscale transition emphasis is changed in accordance with a ~~which~~ conversion method among the two or more conversion methods is used by the conversion ~~means~~ section.

24. (Previously presented) A liquid crystal display device including the signal processing unit according to claim 11.

25. (Currently Amended) A method of controlling a liquid crystal display device having an I/P conversion means-section which, when incoming video data is an interlaced signal, converts the interlaced signal into a progressive signal in accordance with any one of two or more I/P conversion methods, comprising:

~~said liquid crystal display device,~~ carrying out emphasis conversion on video data supplied to a liquid crystal display panel in accordance with at least video data of previous vertical period and video data of current vertical period, so as to emphasize grayscale transition at least from previous vertical period to current vertical period in the progressive signal, thereby compensating for optical response properties of the liquid crystal display panel, and

controlling a degree of the emphasis conversion on the video data so as to be changed in accordance with which ~~kind of~~ I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion.

26. (Currently amended) A computer-readable storage medium storing a program which when executed by causing a computer to execute causes the computer to perform a process of comprising:

controlling a degree of emphasis conversion on video data so as to be changed in accordance with which-kind-of I/P conversion method among two or more I/P conversion methods is used for the-an I/P conversion, wherein

the computer ~~controlling~~ controls a liquid crystal display device comprising:

an I/P conversion ~~means-section~~ which, when incoming video data is an interlaced signal, converts the interlaced signal into a progressive signal in accordance with any one of the two or more I/P conversion methods; and

an emphasis conversion means-section which carries out emphasis conversion on video data of current vertical period so as to emphasize grayscale transition at least from previous vertical period to current vertical period in the progressive signal, ~~and the liquid~~

crystal display device carrying out the emphasis conversion on video data supplied to a liquid crystal display panel in accordance with at least video data of previous vertical period and video data of current vertical period, thereby compensating for optical response properties of the liquid crystal display panel.

27. (Currently amended) A computer-readable storage medium storing a program which when executed by causing a computer causes the computer to perform a process comprising:

changing a degree of grayscale transition emphasis performed by a correction section in accordance with a conversion method used by a conversion section, wherein

the conversion section means which converts an interlaced video signal into a progressive video signal; and the correction section means which corrects a video signal of a current vertical period so as to emphasize grayscale transition at least from current previous vertical period to previous-current vertical period in the progressive video signal, wherein the conversion means-section is capable of conversions by two or more conversion methods,

to operate so as to change a degree of grayscale transition emphasis performed by the correction means in accordance with a conversion method used by the conversion means.

28. (Cancelled)

29. (Currently Amended) A liquid crystal display control method of carrying out emphasis conversion on video data supplied to a liquid crystal display panel in accordance with at least video data of previous vertical period and video data of current vertical period, thereby compensating for optical response properties of the liquid crystal display panel,

the method comprising the steps of:

when incoming video data is an interlaced signal, converting the interlaced signal into a progressive signal in accordance with any one of two or more I/P conversion methods; and

carrying out emphasis conversion on video data of the current vertical period so as to emphasize grayscale transition at least from previous vertical period to current vertical period in the progressive signal,

wherein a degree of the emphasis conversion on the video data is controlled so as to be changed in accordance with which ~~kind of~~ I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion.

30. (Currently Amended) A liquid crystal display control method comprising:

~~a conversion step of converting an interlaced video signal into a progressive video signal;~~
and

~~a correction step of correcting a video signal of current vertical period so as to emphasize grayscale transition at least from current-previous vertical period to previous-current vertical period in the progressive video signal,~~

wherein conversions by two or more conversion methods are possible in the conversion step,

the method further comprising:

~~a control step of changing a degree of the grayscale transition emphasis performed in the correction step in accordance with a which conversion method, among the two or more possible conversion methods, is used in the conversion step.~~

31. (Currently Amended) A liquid crystal display control method ~~of including a conversion step of comprising:~~

converting an interlaced video signal into a progressive video signal; and
modulating the progressive video signal so as to emphasize grayscale transition in each pixel of a liquid crystal display device,

wherein conversions by two or more conversion methods are possible in the conversion step, and

a degree of the grayscale transition emphasis is changed in accordance with a which conversion method among the two or more conversion methods is used in the conversion step.

32. (Currently Amended) A liquid crystal display control method, comprising: including
~~an I/P conversion step of,~~

when incoming video data is an interlaced signal, converting the interlaced signal into a progressive signal in accordance with any one of two or more I/P conversion methods;

~~said method~~ carrying out emphasis conversion on video data supplied to a liquid crystal display panel in accordance with at least video data of previous vertical period and video data of current vertical period, so as to emphasize grayscale transition at least from previous vertical period to current vertical period in the progressive signal, thereby compensating for optical response properties of the liquid crystal display panel, ~~wherein; and~~

controlling a degree of the emphasis conversion on the video data ~~is controlled~~ so as to be changed in accordance with which ~~kind of~~ I/P conversion method among the two or more I/P conversion methods is used for the I/P conversion.

33. (Withdrawn) The signal processing unit for use in a liquid crystal display device according to claim 13, wherein:

the second conversion method is a method of copying a video signal in a certain field, or averaging sets of video signals in a certain field or averaging sets of video signals in a certain field while being weighted, so as to convert the video signal in the field into a progressive video signal.

34. (Currently Amended) The signal processing unit for use in a liquid crystal display device according to claim 14, wherein:

the second conversion method is a method of copying a video signal in a certain field, ~~or averaging sets of video signals in a certain field or averaging sets of video signals in a certain field while being weighted,~~ so as to convert the video signal in the field into a progressive video signal.

35. (Previously presented) A liquid crystal display device including the signal processing unit according to claim 23.

36. (Cancelled)

37. (New) The signal processing unit for use in a liquid crystal display device according to claim 14, wherein:

the second conversion method is a method of averaging sets of video signals in a certain field so as to convert the video signal in the field into a progressive video signal.

38. (New) The signal processing unit for use in a liquid crystal display device according to claim 14, wherein:

the second conversion method is a method of averaging sets of video signals in a certain field while being weighted, so as to convert the video signal in the field into a progressive video signal.